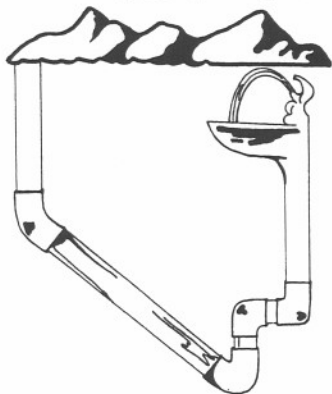


# Water Lines



**Water Lines** is the resource newsletter and calendar of the Nevada Drinking Water and Wastewater Training Coalition.

Volume 9 Winter 2001-2002 issue

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**Special Insert**  
**Water Board Basics**  
**Operational Record Keeping**  
**Meter Replacement Program**

*Water Lines* is funded by **Rural Community Assistance Corporation** through a contract with the Nevada State Health Division.

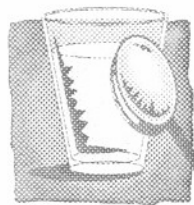
Abigail Johnson, RCAC Editor  
 Julia Helmreich, RCAC Production

## EPA sets drinking water arsenic standard at 10 ppb

The arsenic standard in drinking water will be 10 parts per billion, U.S. Environmental Protection Agency Administrator Christie Whitman announced on Oct. 31.

"EPA intends to strengthen the standard for arsenic by substantially lowering the maximum acceptable level from 50 parts per billion, which has been the lawful limit for nearly half a century," Whitman said.

When the Administrator initiated the arsenic standard review, additional information was available that had not been considered. She asked for time to look at the new science and data that have come to light since the 1999 study by the National Academy of Sciences. The National Academy of Sciences advisory board studied the issue further. The compliance date for implementing a new standard for arsenic is still 2006.



Nearly 97 percent of the water systems affected by this rule are small systems that serve less than 10,000

people each. EPA plans to provide \$20 million over the next two years for the research and development of more cost-effective technologies. EPA also will provide technical assistance and training to small system operators to re-

duce compliance costs and will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture. Last year EPA provided more than \$600 million in grants and loans to water systems for drinking water compliance. The Nevada State Health Division will develop cost estimates for implementing the new arsenic rule. Look for arsenic rule updates in future issues of *Water Lines*.

## EPA urges utilities: increase security and guard against terrorist threats

U.S. citizens are concerned about the security of their drinking water supply in the wake of the Sept. 11 terrorist attacks. The drinking water industry, in cooperation with the U.S. Environmental Protection Agency (EPA), has been working on projects to enhance security and protection for the past few years. Many of these projects were underway prior to the Sept. 11 attacks and are done or near completion. Through these efforts, many water utilities have already taken actions to increase security and reduce terrorism threats.

EPA is working with several groups to develop training courses and materials for water utilities and state personnel on assessing vulnerabilities and improving security. EPA also is working to develop an Information Sharing and Analysis Center to bolster coordinated notification and response. A number of technical projects are underway to assess the fate and transport of potential agents in water, increase security of critical water data and address other issues.

See page 4 for the full checklist of actions that utilities can take to guard against security threats.

## Featured System: Baker GID

**GID provides services to residents and tourists near national park**

*By Micheline Fairbank, Rural Community Assistance Corporation*

Baker, Nevada, is a small town 65 miles southeast of Ely, at the foot of Great Basin National Park. To the east is the vast expanse of the bi-state Snake Valley and to the west is Wheeler Peak, the second highest mountain in Nevada and the centerpiece of the National Park. The town is named for a cattle ranch established by a family named Baker in 1876. The residents of Baker, with a population of slightly more than 100, work on local ranches, in the national park, and within the community, providing services to a multitude of tourists. Baker has several motels and restaurants, and a service station.

Baker Water and Sewer General Improvement District (BGID) was formed in 1992 by the White Pine County Commissioners. It now serves approximately 75 water and sewer connections. The initial BGID board was appointed by the White Pine County Commissioners and subsequently was elected by the BGID voters.

### System highlights

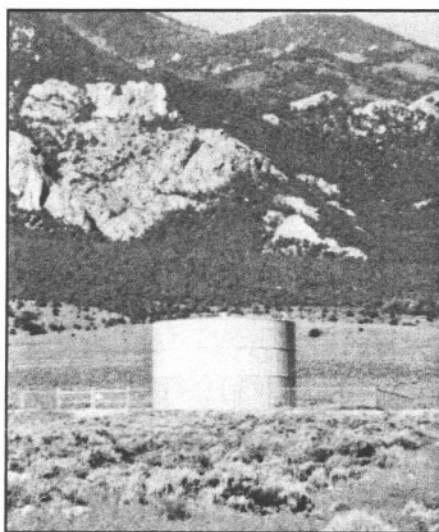
The Baker water system pumps its drinking supply from one well, which provides up to 175 gallons per minute. The water is pumped from the well to a 250,000-gallon storage tank that furnishes the municipal water supply. The community uses a chlorine injection system at the pump station. The wastewater system uses an aeration treatment process.

The need for a water system and wastewater system to serve town residents and park visitors was identified at the time the national park was created. Both the water and wastewater system were built in 1992 and funded jointly by

Featured  
System

the U.S. Department of Interior Parks Service and U.S. Department of Agriculture-Rural Development (USDA). The Park Service provided \$250,000 toward the construction of the water and wastewater system and USDA provided a combination of a loan and a grant for the water and wastewater projects totaling approximately \$530,000. The entire water and wastewater system cost just under \$900,000.

Residential water rates are \$18 a month for 10,000 gallons and \$1 for every 1,000 gallons over the base usage rate. The sewer rate is \$18 per



*The BGID's 250,000 gallon storage tank.*

month for each system hook-up. The community, even with such modest water and sewer rates, has nearly completed the term of its USDA loan while still providing for system maintenance and upkeep.

### BGID management

The five elected members of the BGID board serve between two and three year terms. Perry Steadman is Chairman, Al Genz is Assistant Chairman, Bill Coffman is Secre-

tary/Treasurer and Thomas Baker and Emerson Gonder are Trustees. Lloyd Westphal, an employee of Great Basin National Park, is the water and wastewater system's operator on contract with BGID.

The well-managed and operated BGID provides essential drinking water and wastewater services for residents and tourists at the foot of the Great Basin National Park. ♪

## The Spigot Q & A



**Q 1.** What is a primary role of primacy states?

**A 1.** Implementing the requirements of the state drinking water program.

**Q 2.** What type of valve has a flat or tapered disk that is raised off of or lowered onto a seat:

**A 2.** A globe valve.

**Q 3.** When the flow into a reservoir is adjusted to about the average demand for water in the service area, the reservoir is said to be:

**A 3.** Stagnant.

**Q 4.** A temperature of 35° Celsius is equal to \_\_\_\_° Fahrenheit?

**A 4.** 95° Fahrenheit.

**Q 5.** In laying a water main, a crew digs a ditch 3ft. wide, 9ft. deep, and 1,000ft long. How many cubic yards of earth are removed?

**A 5.** 1,000 yd<sup>3</sup>.

*Source: "Water Distribution System Operations and Maintenance Manual, by Ken Kerri." ♪*

## A shocking lifesaver: The automatic external defibrillator

By Russell Rocha, City of Sparks

Many of us have either taken part in cardiopulmonary resuscitation (CPR) training or we are aware of CPR basics. CPR focuses on three areas: the airway, breathing and circulation. A new device may increase the chances for cardiac victims survival—the automatic external defibrillator (AED).

Many adult victims of sudden cardiac arrest suffer ventricular fibrillation (VF). VF is an abnormal, chaotic heart rhythm that prevents the heart from pumping blood. The only treatment for VF is defibrillation, which is a shock that stops VF and allows the heart to resume normal heart rhythm. With each minute that defibrillation is delayed during cardiac arrest caused by VF, a victim's chance of survival is reduced by 7 to 10 percent. The AED administers an electric shock, defibrilla-

tion, through the chest wall to the heart when a victim is suffering from VF. Built-in computers assess patients' heart rhythm, judge whether defibrillation is needed and administer a shock. Audible and/or visual prompts guide the user through the process. Use of an AED strengthens the chain of survival, which includes a quick 911 call for help, CPR, defibrillation and advanced care.

AEDs are now located in many airports, airplanes, shopping centers, casinos and other areas where people gather. Decide whether your workplace should have an AED.

It is important to learn how to care for and use these units. Contact your local American Heart Association to enroll in a Heartsaver AED training course.

For more information on AEDs, go to [www.cpr-ecc.org](http://www.cpr-ecc.org).

## Kaye is new water operator examination administrator

By Philip Walsack, RCAC

Debbie Kaye recently became the Nevada State Certification Administrator for Water Operator Certification Examinations.

Kaye has worked for Sierra Pacific's Water Division (now the Truckee Meadows Water Authority) for the past 17 years. She began as a meter reader and has worked as assistant plant operator, operator, foreman, and design engineer. Currently, she is the manager of water treatment and distribution operations. Kaye holds a degree in civil engineering from University of Nevada, Reno and a professional engineer's license and grade 4 licenses in both water treatment and distribution. Kaye recently received the George A. Elliott Award from the American Water Works Association for outstanding public service and volunteerism.

The Coalition thanks outgoing administrator **John Hulett**, Washoe County.

## Board for Financing Water Projects OK's grants, clarifies policies

by Tom Whalen, NDEP, AB 198 Program

The Board for Financing Water Projects recently adopted a procedure for smaller systems preference, including a statement that the Board will only consider applicants listed on the current Drinking Water State Revolving Fund Priority List. The Board also adopted a policy statement and procedure regarding phased grant awards and a scale to determine the grant amount as a percentage of the total eligible project cost.

The Board approved Walker River Irrigation District's Letter of Intent to apply for a water conservation grant under the provisions of NRS 349.981 (b). The "Topaz Reservoir Improvement Project" includes im-

provements to Topaz Reservoir operation and efficiency in diverting water from the West Walker River to the Reservoir.

The Town of Tonopah also received a \$2,809,410 grant for drinking water storage and distribution system improvements.

Storey County received a \$1,503,096 grant to replace a 3.7 mile water pipeline serving Virginia City, Gold Hill and Silver City.

Gerlach General Improvement District in Washoe County will use a \$849,886 grant to install water meters to provide consumption data for the design of a treatment facility. Gerlach is only the third com-

munity in the nation to treat drinking water to remove uranium.

Round Hill General Improvement District at Lake Tahoe received a \$450,000 grant to install meters for water conservation, accurate consumption monitoring, full-cost pricing and billing, and to eliminate the need for treatment plant expansion.

For more information, contact Tom Whalen, 775/687-4670 ext. 3111.



Certification  
Connection  
...will return in the next  
issue of *Water Lines*.



# EPA's water and wastewater utility security checklist

## Increase vigilance

- ☐ Watch for suspicious behavior or for persons tampering with water and wastewater facilities and assets.

### ☐ **Drinking water utilities:**

Guard access points to dams, aqueducts, source water reservoirs (watch for people adding liquid or solid material), intakes, storage and distribution facilities (reservoirs, tanks, towers, pumping stations), manholes (look out for people adding liquid or solid material), and fire hydrants (watch for people with no connection to the utility or fire department personnel).



- ☐ **Wastewater utilities:** Guard access points to manholes, storm sewers and pumping stations.

## Guard against intrusion

- ☐ Lock doors and set alarms in all offices, drinking water well houses, treatment plants and vaults;
- ☐ Control access to facilities and water supply reservoirs, and scrutinize visitors and contractors;
- ☐ Post guards at treatment plants, and post "Employee Only" signs in restricted areas;
- ☐ Control access to water supply reservoirs;
- ☐ Secure hatches, meter boxes, hydrants, manholes and other access points;
- ☐ Increase lighting in parking lots, treatment bays and other areas with limited staffing;
- ☐ Control access to computer networks and control systems, and change passwords frequently;



- ☐ Do not leave keys in equipment or vehicles at any time.

## Make security a priority

- ☐ Conduct background security checks on employees at hiring and periodically thereafter;
- ☐ Develop a security program with written plans, and train employees frequently;
- ☐ Ensure all employees are aware of communications protocols with relevant law enforcement, public health, environmental protection, and emergency response agencies;
- ☐ Ensure employees are vigilant, and are aware of the seriousness of breaches in security;
- ☐ Immediately notify designated security officers or local law enforcement agencies when unaccompanied strangers come on site;
- ☐ Vary the timing of operational procedures to change patterns;
- ☐ Change passcodes and make sure keys and access cards are returned after dismissing employees;
- ☐ Train customer service staff, and give them checklists for handling threats.



## Coordinate effective emergency response

- ☐ Review existing emergency response plans, and ensure they are current and relevant;
- ☐ Develop clear protocols and chains-of-command for reporting and responding to threats;
- ☐ Practice emergency protocols regularly;
- ☐ Ensure key utility personnel (both on and off duty) have ac-

cess to crucial telephone numbers and contact information at all times. Keep the list up to date;

- ☐ Develop close relationships with local law enforcement agencies, and make sure they know where critical assets are located. Request they add your facilities to their routine patrols;
- ☐ Report any illness among utility customers that might be associated with water supplies to health officials;
- ☐ Immediately report criminal threats, suspicious behavior or attacks on water utilities to law enforcement officials and the Federal Bureau of Investigation.

## Invest in security and infrastructure improvements

- ☐ Assess vulnerable source water protection areas, drinking water treatment plants, distribution networks and other key infrastructure elements;
- ☐ Move quickly with the most obvious and cost-effective physical improvements, such as tamper-proofing manhole covers, fire hydrants and valve boxes;
- ☐ Improve computer system and remote operational security;
- ☐ Seek financing for comprehensive system improvements.



## Information

For more information on how to guard against security threats, go to the following web sites:

[www.epa.gov/ebtpagesecounterterrorism.html](http://www.epa.gov/ebtpagesecounterterrorism.html)

[www.epa.gov/ceppo/pubs/secale.pdf](http://www.epa.gov/ceppo/pubs/secale.pdf)

[www.nlc.org/nlcorg/site/newsroom/terrorismresponse](http://www.nlc.org/nlcorg/site/newsroom/terrorismresponse)

## Nevada Training Coalition announces new board

**N**evada Water and Wastewater Training Coalition Board election results are in.

Adele Basham, Nevada State Health Division; Georgia Greenrod, Nevada Rural Water Association; and Russell Rocha, City of Sparks were all elected new board members. Phil Walsack, Rural Community Assistance Corporation and Dean Adams, UNR, Department of Civil Engineering were re-elected to serve another term.

The Coalition thanks outgoing Chair Cliff Lawson, Board members Tom Hoffert and Marlyn Rinta, and ex-officio secretary Dave Minnedew for outstanding efforts. ♠

## NDEP grants available; RFPs go out in January

*By Nevan Kane, NDEP*



The Nevada Division of Environmental Protection (NDEP) recently endorsed the Yerington and Beatty Wellhead Protection Plans. The two towns are now eligible for grants to implement protection strategies and public education activities.

A request for proposals to receive wellhead protection grants will be sent to all community water systems and tribes in the state in early January; proposals will be due in March.

NDEP continues to work with Jon Anderson at the Nevada Rural Water Association to assist communities with plan development and implementation.

For more information on wellhead protection, call Nevan Kane, NDEP, at 775/687-4670 ext. 3104. ♠

## NDEP consolidates groundwater oversight programs

*By Valerie King, NDEP*

**T**he Nevada Division of Environmental Protection has consolidated groundwater oversight in Nevada. The Underground Injection Control (UIC) Program now joins the Wellhead Protection Program (WPP) within the Bureau of Water Pollution Control, collectively forming the new "Groundwater Protection Branch." This branch will protect the quality of groundwater by comprehensively addressing existing and potential groundwater issues.

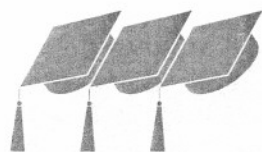
Illnesses such as Methemoglobinemia (*Blue Baby Syndrome*), which is caused by elevated concentrations of nitrate in groundwater, often due to a high density of septic discharges, will now be addressed and tracked by a single program. The new branch also will provide a more comprehensive picture for mitigation and prevention; and offer outreach to communities on

approaches for protecting local groundwater resources.

The UIC program now regulates all injection activities into groundwater that utilize a well. The WPP works to help communities develop awareness of groundwater contamination issues and implement plans for protecting groundwater near areas that surround municipal water supply wells.

This new branch also will administer the permit programs that oversee individual sewage disposal systems that utilize septic tanks and leachfields with a flow of greater than 5,000 gallons per day and sand/oil/water separators that discharge to the subsurface. These are relatively small regulatory issues, but both can pose a risk to the quality of groundwater resources.

For more information, call Valerie King at 775/687-4670 ext. 3146. ♠



## Nevada operators successful in water certification exams

The following operators passed entry level water certification exams in September 2001 for distribution grades 1&2, and treatment grades 1&2. Congratulations to all!

### Distribution grades 1&2

James R. Ashby D-1, Michael Austin D-1, Bryan D. Buono D-2, Gary Chapin D-1, John J. Copfer D-1, Miles T. Davies D-1, Scott M. Fleckenstein D-2, Peter J. Foust D-1, Tim Gordon D-2, Stephen Gustafson D-2, Michael J. Howard D-2, Brent L. Itterly D-1, Jacob K. Kanalulu D-2, Casey L. Kelly D-1, Andy Latham D-1, Michael A. Mcallister D-1, Antonio Mendive D-1, Phillip E. Mills D-1, Crystel F. Montecinos D-1, Douglas H. Pierce D-2, Miguel Quintanilla D-2, Manuel J. Resendez D-1, Corey D. Ross D-2, Charles E. Scarborough D-2, John V. Smith D-2, Jerome Taylor D-2, Darius Whitfield D-1, Jimmie Winters D-1.

### Treatment grades 1& 2

Don Allen T-1 Erik Daniels T-1, Brian Habig T-1, Scott Knecht T-1, Gregory P. Kodweis T-2, Ken Mallory T-2, Anthony S. Mayor T-1, Crystel C. Montecinos T-2, Douglas H. Pierce T-2, John C. Rush T-2, Todd Saxberg T-2, Scott W. Smiley T-1, Jeffery Solomon T-1, Jimmie Winters T-2. ♠

# RESOURCE ROUND-UP

## Clearinghouse offers videos, reports, booklets

A new video, titled **"Effluent Pumps for Onsite Wastewater Treatment: Selecting the Right Pump for the Job,"** by the Sump and Sewage Pump Manufacturers Association details how to size and select a pump for an enhanced flow septic tank effluent pump (STEP) system and a low-pressure pipe (LPP) distribution system. The cost is \$45.



The **"USDA Loan and Grant Funding for Small Community Wastewater Projects"** by the U.S. Environmental Protection Agency (EPA) Office of Water provides general information about the U.S. Department of Agriculture Rural Utility Service's (RUS) Water and Waste Disposal Loans and Grants Program, including how RUS funding compares to joint funding sources and to EPA total need. The cost is \$1.60 plus shipping.

To order the video, call the National Small Flows Clearinghouse (NSFC) at 800/624-8301 and request Item #WWPKDM97; to order the USDA booklet, request Item #FMBLNF34.

The EPA's, **"Frequently Asked Questions on CAFOs"** booklet summarizes a number of questions and answers on the proposed concentrated animal feeding operation (CAFO) rule that EPA has addressed in recent public meetings. CAFOs are animal feeding operations that house more than 1,000 animal units and meet certain discharge requirements.

A free booklet called **"Environmental Indicators of Water Quality in the United States,"** by EPA's Office of Water, shows trends in water quality over time.

NSFC's free report, **"Water Pollution Control: Twenty-five Years of Progress and Challenges for the New Millennium,"** was developed by the EPA Office of Water. The report summarizes the progress and challenges of the first 25 years of the Clean Water Act and describes what work remains to be done.

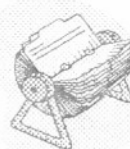
For more information on the water quality or water pollution reports, or the CAFO booklet, visit the NSFC web site at [www.lgean.org/html/whatsnew.cfm?id=221](http://www.lgean.org/html/whatsnew.cfm?id=221).

## EPA offers new product for tribal drinking water systems

The EPA Drinking Water Utilities Team has a new product,

### Preventative Maintenance Tasks for Tribal Drinking Water Systems

This simple card file system organizes routine operation and maintenance activities for small tribal ground water systems into daily, weekly, monthly and yearly tasks. For a copy, call the Safe Drinking Water Hotline at 800/426-4791.



## Need help preparing for the water distribution exam?

The Nevada Drinking Water and Wastewater Training Coalition received donated training materials from the American Water Works Association's (AWWA) California/Nevada Section. **AWWA's Water Distribution Operator Training Handbook, Second Edition** has been forwarded to several rural libraries. The Coalition would especially like to thank Darcy Burke and Glenn Reynolds. This handbook is an excellent study guide for the Nevada water distribution exam.

## Wastewater training sources and information available

To order the Small Wastewater System Operation and Maintenance self-paced course from Ken Kerri's Office at California State University, Sacramento, go to [www.owp.csus.edu/](http://www.owp.csus.edu/)



California State University, Chico offers one to three-day courses with field components at multiple locations around the state, go to [www.calwastewater.org](http://www.calwastewater.org).

University of Nevada, Reno Cooperative Extension provides information on septic system and private well management, go to [www.extension.unr.edu/pubsmenu.html#waterquality](http://www.extension.unr.edu/pubsmenu.html#waterquality).

University of Arizona Cooperative extension has published a homeowner's guide to on-site systems. Go to <http://ag.arizona.edu/pubs/water/az1159.pdf>.

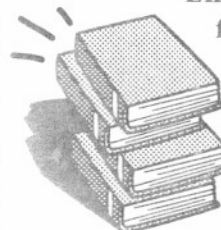
EPA's Office of Wastewater Management has issued guidelines for decentralized wastewater treatment system management. Go to [www.epa.gov/owm/decent](http://www.epa.gov/owm/decent).



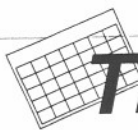
Questions about dairy impacts on water quality? Check out [www.epa.gov/region09/animalwaste](http://www.epa.gov/region09/animalwaste).

## Prepare for the unexpected

The **AWWA Manual M19: Emergency Planning for Water Utility Management** 4th edition, is now available. For a copy, call AWWA at 800/926-7337 or order online at [www.awwa.org](http://www.awwa.org) (click on bookstore). Cost is \$55 for members, \$85 for non-members.







# Training Calendar 2002

**Jan. 8**—Carson City —Nevada Drinking Water and Wastewater Training Coalition Meeting, Nevada State Library Board Room, 1:30-4 p.m. Info: Adele Basham, 775/687-6615 ext. 265.

⚡ **Jan. 9** — Yerington — NvRWA electrical troubleshooting (3 hrs). Info: 775/884-2055.

**Jan. 9** — Carson City — RCAC Wastewater Examination Refresher Course. Info and registration: John Daley, 775/882-8887.

**Jan. 15-16**—Reno — ACR/RCAC provisional operator certification training. Info: 775/882-8887.

⚡ **Jan. 16** — Lovelock — NvRWA confined space (2 hrs), first aid (2 hrs), Hazmat training (2 hrs). Info: 775/884-2055.

**Jan. 17-18**—Winnemucca — RCAC Water Fair. Info: John Dailey, 775/882-8887 or [jdailey@rcac.org](mailto:jdailey@rcac.org).

**Jan. 19-20** — Reno — Nevada Water Environment Association Seminar on Sequential Batch Reactors Operations and Maintenance at South Truckee Meadows Sewage Treatment Plant; for water treatment plant operators and managers. To register: Linda Peterson or Nancy Moss at 775/329-6463 or after hours leave a message at 775/329-7757.

**Jan. 27-31** — Las Vegas — AWWA/Water Environment Federation Water Reuse, Conservation and Resources Management Conference & Exhibition. Info: 800/926-7337.

⚡ **Feb. 6** — Austin — NvRWA, funding sources and application process. (2 hrs). Info: 775/884-2055.

**Feb. 11-12** — Las Vegas — ACR/RCAC provisional operator certification training. Info: 775/882-8887

**Feb. 13-14** — Pahrump — ACR/RCAC provisional operator certification training. Info: 775/882-8887

⚡ **Feb. 20** — Eureka — NvRWA fire hydrant repair (3hrs). Info: 775/884-2055.

**March 5-6** — Carson City — ACR/RCAC provisional operator certification training. Info: 775/882-8887.

**March** (date TBA) — Carson City —NvRWA Symposium. Info: 775/884-2055.

**March 26-28**—Sparks — Nevada Rural Water Association Technical Conference at John Ascuaga's Nugget. Info: 775/884-2055.

**March** (date TBA) — NDEP Wellhead protection program deadline to submit proposals. Info: Nevan Kane 775/687-4670 ext. 3104.

**March 20-22** — Reno — Nevada Water Environment Association Annual Meeting. Info: Eric Leveque, 702/792-3711.

**April 9-10**—Pahrump — ACR/RCAC provisional operator certification training. Info: 775/882-8887.

## Water operator certification exams

Water operator certification tests are scheduled in 2002 for the weeks of March 18, March 29 (at NvRWA conference), June 3, August 16, and December 2. Info: Debra Kaye, P.E., 775/834-8100

## Wastewater certification exams

Wastewater certification exams will be given the second Thursday in January, July and October in Reno, Las Vegas and Ely, and March 29 at the NvRWA conference. Info: 702/433-1498.

## Community College of Southern Nevada Wastewater and Water Technology Program

Info: LeAnna Risso, 702/434-6600 ext. 6418.

## ⚡ WWET training in Clark County

Info: Gladys Alford, 702/258-3834; see [www.wwet.org](http://www.wwet.org) for a current training calendar.

## RCAC Water Fair, Winnemucca, Nevada

**When:** Jan. 17, 9a.m.-5 p.m. and Jan. 18, 9 a.m.-noon

**Who should attend:** If you are responsible for a water system, this training is for you. Operators: CEU credit hours may be earned. Board members: Learn what you need to know about water system management and finances. Planning on doing some infrastructure construction? Pick up tips from the experts on how to make sure your project is completed successfully.

## Topics

**Jan. 17 a.m.** Managing Infrastructure Projects by Applying Total Quality Management

**Jan. 17 p.m.** Hands-on LMI Metering Pumps and Water Meters

**Jan. 18 a.m.** Understanding and Using Budgets, Grant Writing, Where to Find Grants and Loans

**Where:** Winnemucca, at the Humboldt County Convention Center

Space is limited; so reserve your seat now. To register or for more info, call 775/882-8887; e-mail [jdailey@rcac.org](mailto:jdailey@rcac.org)

⚡ This symbol designates training pre-approved by the Nevada State Health Division for continuing education units (CEU) credit. Other training may be eligible for CEUs but is not yet pre-approved. Before attending any training, contact the Health Division at 775/687-6615 ext. 235 for approval. Ten hours of approved training equals 1 CEU. A different ratio applies for safety training. Contact Steve Brockway 775/687-6615 ext. 235 for details.



## Nevada Drinking Water and Wastewater Training Coalition

**American Water Works Association  
California/Nevada Section**  
[www.ca-nv-awwa.org](http://www.ca-nv-awwa.org)  
Glenn Reynolds, Smaller Utilities  
Committee Chair, 510/790-1602  
Nicole Schreuder, training, 909/291-2103

**Indian Health Service**  
Dominic Wolf, 775/784-5327

**Nevada Division of  
Environmental Protection**  
[www.state.nv.us/ndep/index.htm](http://www.state.nv.us/ndep/index.htm)  
Leo Drozdoff — Water Pollution Control  
775/687-4670, ext. 3142  
Nevan Kane — Wellhead Protection  
775/687-4670, ext. 3104  
Tom Whalen, — AB 198 Water Grant Program  
775/687-4670, ext. 3111

**Nevada Rural Water Association**  
[www.nvrwa.org](http://www.nvrwa.org)  
Georgia Greenrod, 775/884-2055

**Nevada State Health Division**  
[www.state.nv.us/health/bhps](http://www.state.nv.us/health/bhps)  
775/687-6615  
Adele Basham, DWSRF, ext. 265  
Steve Brockway (CEU approval), ext. 235  
Cliff Lawson, ext. 227  
Patty Lechler, ext. 238  
Dana Pennington, ext. 237

**Nevada Water Environment Association**  
[www.wef.org](http://www.wef.org)  
Bruce Johnson, 702/369-6175  
Starlin Jones, 775/861-4104  
Rick Warner, 775/954-4621

**Public Utilities Commission of Nevada**  
[www.state.nv.us/puc](http://www.state.nv.us/puc)  
Steve McGoff, Utility Engineer, 775/687-6040

**Rural Community Assistance Corporation**  
[www.rcac.org](http://www.rcac.org)  
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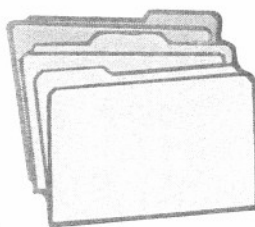


## Water Lines Special Insert

### Water Board Basics: Keys for Success

#### Operational Record Keeping

Records are the glue that holds small water utilities together. The process of “keeping” the records is the utility board’s responsibility. The board and its manager or operator are responsible for “making” accurate records. The difference is often misunderstood. A record can be as simple as a written note of how many gallons a ground-water well produced over a month’s time. Finding that record next year, during the same month, is the secret to “record keeping.”



When developing a record keeping system, the board must decide what records to collect; where to store them; and who has access to them. Removing a record from the utility’s file cabinet and leaving it at a board member’s house for several months is not effective record keeping! A utility should keep four types of records, including operational, legal, financial, and managerial. Let’s focus on operational records

#### Operations and Maintenance Manuals

While all four types of records are important, operational records are often overlooked. The operator is frequently too busy “fighting fires” to set up and keep good operational records. These records include operations and maintenance (O&M) manuals, as-built distribution maps, schematic facility diagrams, operational data and repair/replacement records.

An O&M manual is a key document for the utility. The board should insist that the operator complete this task, because many times a good operator leaves the district and the new operator has only a manual for reference.

An O&M manual should list operations responsibilities that must be completed daily, weekly and monthly. These responsibilities are most commonly included in the O&M manual as a checklist. The O&M manual also should contain a basic preventative maintenance schedule, including a simple diagram of the distribution system, pressure zones (if applicable) and the location of water quality sampling points. In addition, it should include copies of pertinent manufacturer instruction and repair manuals for operator reference.

#### Maps, diagrams and repair records

Accurate and up-to-date distribution maps are critical! The base map is usually prepared by an engineering firm when the system is first constructed or during a major system upgrade. From then on, the utility must note changes to the system. It could take 10 years or more before the next system upgrade is completed. It is very important to have several (five at a minimum) copies of the distribution maps. One set is filed in the utility’s historical file and is used only as a master copy for making addi-

## *Keys for Success: Operational Record Keeping*

tional sets. Many utilities have used the master copy to make notes on during a field project and later regretted doing so.

Schematic facility diagrams are not used enough by small utilities. A diagram could simply be a hand-made drawing of an electrical panel, a valve arrangement or a storage tank volume "cheat sheet." When an emergency arises, these drawings are invaluable. Schematics of valve arrangements (showing which valve to open or close) are helpful, especially for backup operators who perform only weekend operations. A chart showing the rate a storage tank will fill at a specific pumping rate is also a useful tool. The chart saves time; prevents math errors and can be used to plan the operator's daily routine. Schematic diagrams should be a single-page drawing placed in a plastic slip-cover and posted on the wall of the well shack, treatment storage room or office.

Operational data should be collected and kept for future reference. The most valuable operational data is a record of source water production. Well-operated small utilities keep track of groundwater or spring production so that they can compare it against the customers' metered usage. The data is used to make water loss calculations. If water losses are above 15 percent, the utility should find out where its water is going. The utility should repair master meter and source water meter problems im-

mediately. Operational data also can be helpful in planning and budgeting. It helps to know how materials/supplies were used in the summer months last year so that

plans can be made to purchase the needed volume before it runs out this year.

Repair and replacement records are made by the operator and presented to the board, usually during board meetings. These records detail what parts were used and where system improvements were made. If repairs are made in the distribution system, the operator should mark the lo-

cation of the repair on the office copy of the distribution map. The operator should make a list of repairs for equipment, such as well pumps, pressure reducing, sustaining, and surge protection valves, chemical feed pumps and customer meters. Repair records can also be used in overall planning. If a section of distribution main has been repaired six or seven times during the course of a year, it may be time to consider replacing the whole section rather than repairing it piece by piece.

Operations records are valuable tools. Records document the utility's daily operations and can help a district plan for the future. Take the time to set up a good record keeping file. It will make operational decisions clear for the operator and the board. It also shows customers that the utility is doing a good job.





## Water Lines Special Insert

### Water Board Basics: Keys for Success

#### Meter Replacement Program

Water utilities are businesses that receive money for making a product. It's really that simple. A water utility produces water and sells it to its customers. To produce water, a utility provides potable, palatable and wholesome water at an adequate pressure and quantity, 24-hours-a-day.

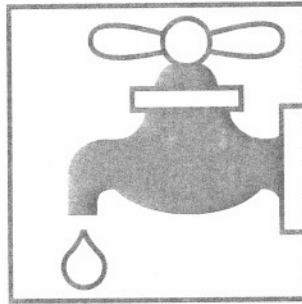
##### Water Meters

Efficient water utilities charge customers for the amount of water used monthly at a rate sufficient to cover all expenses. A water meter is used to measure the amount of water delivered. The meter usually measures in gallons or in cubic feet. Most utilities charge customers in 1,000 gallon increments.

Water meters are important and serve several purposes. A water meter can measure how much water is produced from a spring or well, how much water is delivered from that spring or well to a storage tank or how much water a neighborhood uses. More importantly, water meters can measure how much water each customer uses and are the "life blood" of the utility.

For metered systems, the water meter is the cash register. Residential metered usage can make up 25 percent to 75 percent of the utility's annual income. If the utility's meters are old and under-register the amount of water delivered to the customer, the utility makes

less money. In fact, the utility loses money when meters under-register. How? Because the utility spent money to provide water to the customer's meter, in the form of electricity, chemicals and salaries. How much money can a utility lose from under-registering meters? See the chart on



the back of this fact sheet for the value of unregistered water.

##### Meter Replacement

Every board of directors will be asked to justify a meter replacement program. Let's justify one for a Nevada utility, named Goldville, which has never had a meter replacement program. Goldville Utility is 12 years old; it has 120 meters in the system; and 10 of its meters are registering 20 percent slow. The customers of these 10 slow meters use 10,000 gallons per month each and are charged \$1.75 per 1,000 gallons of water. Using the value of unregistered water, Goldville is receiving \$35 per month less income than it should. This amounts to \$420 annually!

The cost of a new meter ranges from \$35 to \$65 each, so let's use \$45 for our example. Goldville buys 10 new meters for \$450. Let's assume Goldville's operator makes \$9 per hour, it takes two hours to replace each meter, and the operator replaces all 10 meters. It will cost Goldville \$180 in labor to replace the meters. Therefore, the total cost (new

## Keys for Success: Meter Replacement Program

meters and labor) is \$600. When we take this \$600 expense and subtract the annual loss of \$420 in revenue, we see that Goldville has "lost" \$180 over the course of the year. If this were really the case, utilities would never replace meters!

The fact is that meters generally don't under-register all at once. They become inaccurate gradually. Assume that Goldville's 12 year-old meters started reading slow in their ninth year. When we use a straight line to show the accuracy decline of Goldville's meters over this three-year period, we see that the lost income is \$69.30 for each meter. Goldville lost \$693 over the three-year period. The cost of meter replacement project is \$630. Goldville is now ahead \$63.

When should you replace water meters? First, review the manufacturer's warranty. If the manufacturer warranties the accuracy

of the meter for 10 years, replace the meter before the tenth year. If the manufacturer states the meter will be accurate for one million gallons, replace the meter at or before this usage.

Successful small utilities believe that the meter is their cash register and use aggressive meter replacement programs. Some replace their meters when 75 percent of the manufacturer's warranty is reached.

If a utility has never had a meter replacement program, its board of directors could begin one by requesting that the operator replace the 10 oldest meters in the system or replace the 10 highest meter readings.

Either way, the meter replacement program is off the ground and the utility will realize more income. More importantly, the utility will not lose hard-earned income.

### The Value of Unregistered Water

Unregistered Water	Monthly Water Rate								
	\$1.25 per 1,000 Gallons			\$1.50 per 1,000 Gallons			\$1.75 per 1,000 Gallons		
	10,000 Gallons used	25,000 Gallons used	50,000 Gallons used	10,000 Gallons used	25,000 Gallons used	50,000 Gallons used	10,000 Gallons used	25,000 Gallons used	50,000 Gallons used
2 %	\$0.25	\$0.63	\$1.25	\$0.30	\$0.75	\$1.50	\$0.35	\$0.88	\$1.75
4 %	0.50	1.25	5.00	0.60	1.50	6.00	0.70	1.75	7.00
6 %	0.75	1.88	7.50	0.90	2.25	9.00	1.05	2.63	10.50
8 %	1.00	2.50	10.00	1.20	3.00	12.00	1.20	3.50	14.00
10 %	1.25	3.13	12.50	1.30	3.75	15.00	1.75	4.38	17.50
12 %	1.50	3.75	15.00	1.80	4.50	18.00	2.10	5.25	21.00
14 %	1.75	4.38	17.50	2.10	5.25	21.00	2.45	6.13	24.50
16 %	2.00	5.00	20.00	2.40	6.00	24.00	2.80	7.00	28.00
18 %	2.25	5.63	22.50	2.70	7.25	27.00	3.15	7.88	31.50
20 %	2.50	6.25	25.00	3.00	7.50	30.00	3.50	8.75	35.00

*Water Board Basics is produced by Rural Community Assistance Corporation through a contract with the Nevada State Health Division. For more information, contact RCAC at 775/882-8887.*